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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/620,156

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EXAMINER

SIMITOSKI, MICHAEL J

ART UNIT

PAPER NUMBER

2134

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/620,156	Applicant(s) ROBERTSON ET AL.	
	Examiner MICHAEL J. SIMITOSKI	Art Unit 2134	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-21 is/are pending in the application.
- 4a) Of the above claim(s) 1,2 and 13-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3,5-12 and 19-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The response of 1/7/2008 was received and considered.
2. Claims 3, 5-12 & 19-21 are pending.

Response to Arguments

3. Applicant's arguments with respect to claims 3, 5-12 & 19-21 have been considered but are moot in view of the new ground(s) of rejection. However, the following note is made. Applicant's response (p. 18) argues that neither Trcka nor Vaidya discloses probes or scans. However, any known attack or suspected attack can reasonably be interpreted as a probe or scan. For example, Vaidya, col. 8, discloses multiple access attempts by a user. While not explicitly stated, this is a probe because the user is trying to access the file.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3, 6-7, 9 & 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 7,120,931 to Cheriton et al. (**Cheriton**) in view of U.S. Patent 6,279,113 to Vaidya et al. (**Vaidya**).

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Regarding claim 3, Cheriton discloses receiving a plurality of messages (data, col. 5, lines 26-27) from a data sensor (router, col. 5, lines 26-27) located at a network audit point (netflow directory, col. 5, lines 26-27), each of said messages describing an event occurring on said communications network (data entering router), processing said messages to form connection sessions (flows) by clustering packets exchanged between two addresses within a specified time period (classifying flows based on source and destination, col. 5, lines 61-65, col. 6, lines 10-20, lines 39-42 & lines 56-61) where the addresses are not predetermined (the netflow directory clusters packets having a common source/destination, defined as a flow, col. 5, lines 61-65), grouping connection sessions into a plurality of groups (creating multiple aggregate filters, col. 7, lines 58-59), but lacks scoring each group and generating an alert for each group whose score is greater than an empirically derived threshold. However, Vaidya teaches that a group of packets can be analyzed to recognize an attack by determining that the count of certain characteristics in the packet stream, such as an attempt to access a file, exceeds a threshold (col. 8, lines 16-39), where a notification can be sent to a reaction module (col. 8, lines 37-39). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Cheriton to detect a surveillance probe by scoring the groups of flows and generate an alert for each group whose score is greater than an empirically derived threshold. One of ordinary skill in the art would have been motivated to perform such a modification to detect a potential attack, as taught by Vaidya.

Regarding claim 6, Cheriton, as modified above by Vaidya, teaches generating a profile of surveillance activity (counter, col. 8, lines 30-31), said profile of surveillance

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activity comprising one or more of the following: the number of attacks per unit time/the temporal frequency trends of individual attacker (Z trying to access A) (event occurring a threshold number of times within a predetermined time interval, Vaidya, col. 8, lines 16-21).

Regarding claim 7, Cheriton, as modified above by Vaidya, teaches processing one or more said detected surveillance probes to produce a detected surveillance scan (user Z making access request for file A, col. 8, lines 21-24), said processing of one or more said detected surveillance probes to produce a detected surveillance scan comprising one or more of the following: modeling and detecting surveillance scans performed by a particular source (user Z, col. 7, lines 36-39 & col. 8, lines 26-28) by identifying a source address (user Z) that generates more than a specified number of probes (threshold) within a specified time period (10 minutes, col. 8, lines 21-28).

Regarding claim 9, Cheriton, as modified above by Vaidya, teaches generating a profile of surveillance activity (counter, col. 8, lines 30-31), said profile of surveillance activity comprising one or more of the following: the number of attacks per unit time/the temporal frequency trends of individual attacker (Z trying to access A) (event occurring a threshold number of times within a predetermined time interval, col. 8, lines 16-21).

Regarding claim 21, Cheriton discloses limiting the number of analyzed flows by reporting only source addresses that have a particular characteristic (for instant, all with a source of 3.xxx.xxx.xxx, col. 7, lines 33-52) and since Cheriton groups packets into flows, Cheriton discloses limiting the number of analyzed flows by reporting only source address groups that have certain characteristics (a source address group being

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3.xxx.xxx.xxx and 3.141.xxx.xxx, col. 7, lines 50-57), but lacks explicitly that the groups are reported based on a specified number of probes within a specified period of time. However, as described above with respect to claim 7, Vaidya teaches that a group of packets can be analyzed to recognize an attack by determining that the count of certain characteristics in the packet stream, such as an attempt to access a file, exceeds a threshold (col. 8, lines 16-39) within a predetermined period of time (col. 8, lines 26-28), where a notification can be sent to a reaction module (col. 8, lines 37-39). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Cheriton's flow classification to limit flows (detected scans) by reporting only source addresses and groups of source addresses that perform more than a specified number of probes (access attempts) within a specified time. One of ordinary skill in the art would have been motivated to perform such a modification to detect a potential attack, as taught by Vaidya.

6. Claims 5 & 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Cheriton** and **Vaidya**, as applied to claims 3 & 7 above, in view of U.S. Patent Application Publication 2003/0188189 to Desai et al. (**Desai**).

Regarding claim 5, Cheriton lacks controlling false positive detections versus false negative detections. However, Desai teaches an intrusion detection system that establishes an intrusion by comparing various activities to thresholds and as such teaches that adjusting pre-tuned thresholds improves accuracy and reduces the number of false positives (¶160). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Cheriton (as

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modified above by Vaidya) to include a mechanism for adjusting the metrics used to determine intrusions (such as an intrusion rate of col. 8, lines 16-39). One of ordinary skill in the art would have been motivated to perform such a modification to reduce the number of false positives, as taught by Desai (§60).

Regarding claim 8, Cheriton lacks controlling false positive detections versus false negative detections. However, Desai teaches an intrusion detection system that establishes an intrusion by comparing various activities to thresholds and as such teaches that adjusting pre-tuned thresholds improves accuracy and reduces the number of false positives (§60). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Cheriton (as modified above by Vaidya) to include a mechanism for adjusting the metrics used to determine intrusions (such as an intrusion rate of col. 8, lines 16-39). One of ordinary skill in the art would have been motivated to perform such a modification to reduce the number of false positives, as taught by Desai (§60).

7. Claims 10 & 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Cheriton** and **Vaidya**, as applied to claim 7 above, in view of U.S. Patent 6,424,654 to **Daizo**.

Regarding claim 10, Cheriton discloses the grouping of scanning hosts comprising modeling and detecting scans distributed across a series of source addresses by grouping addresses, (col. 7, lines 44-57, where the detection causes filtering of traffic from an IP address range; upon further investigation, the IP address

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range can be limited to a more narrow range). This section also describes how the flow analyzer will cause filtering of all packets from, for example, an ISP suspected of hosting an attacker and once the attacker is identified, only analyzing and filtering packets from the attacker. Cheriton lacks subtracting one address from another and placing the two addresses in the same group if the difference is less than a specified amount. However, Daizo teaches that a client can be limited to a single DHCP server because a DHCP server is known to give out a certain range of IP addresses (col. 5, lines 22-27). The client has a reference address and subtracts from the reference address received IP addresses from different DHCP servers; the address with the smallest distance from the reference is the correct DHCP server (col. 5, lines 27-45). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Cheriton, as modified by Vaidya, to perform the grouping of addresses by subtracting a received IP address from one IP addresses of detected potentially harmful traffic and if it is within a certain range (such as the range described in Cheriton, col. 7, lines 49-56), grouping two the together. One of ordinary skill in the art would have been motivated to perform such a modification to determine if an IP address is within a certain range and hence to detect and filter all potentially harmful traffic from an ISP using a simple arithmetic method, as taught by Daizo (col. 2, lines 57-59).

Regarding claim 12, Cheriton discloses generating a profile of surveillance activity (Vaidya's counter, col. 8, lines 30-31), said profile of surveillance activity comprising one or more of the following: the number of attacks per unit time/the temporal frequency trends of individual attacker (Z trying to access A) (event occurring a threshold number of times within a predetermined time interval, col. 8, lines 16-21).

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Cheriton**, **Vaidya** and **Daizo**, as applied to claim 10 above, in further view of **Desai**.

Regarding claim 11, Cheriton, as modified above, lacks controlling false positive detections versus false negative detections. However, Desai teaches an intrusion detection system that establishes an intrusion by comparing various activities to thresholds and as such teaches that adjusting pre-tuned thresholds improves accuracy and reduces the number of false positives (§160). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Cheriton to include a mechanism for adjusting the metrics used to determine intrusions (such as an intrusion rate of col. 8, lines 16-39). One of ordinary skill in the art would have been motivated to perform such a modification to reduce the number of false positives, as taught by Desai (§160).

9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Cheriton** and **Vaidya**, as applied to claim 3 above, in view of U.S. Patent 6,453,345 to Trcka et al. (**Trcka**).

Regarding claim 19, Cheriton lacks the steps listed. However, Trcka teaches that it is beneficial to analyze incoming packets for invalid data (such as a non-existent LAN address, col. 15, lines 51-52) to determine if a packet should be further analyzed (col. 15, lines 37-39) by setting a flag (col. 15, lines 50-51), where the flag is analyzed to determine if the packet is recorded for processing (col. 15, lines 58-62). Therefore, it

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would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Cheriton to identify packets that have a particular arrangement of flags set (flagged as GOOD or BAD). One of ordinary skill in the art would have been motivated to perform such a modification to determine if the packet should be further analyzed, as taught by Trcka.

10. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Cheriton** and **Vaidya**, as applied to claim 3 above, in view of U.S. Patent Application Publication 2002/0174362 to Ullmann et al. (**Ullmann**).

Regarding claim 20, Cheriton lacks the steps listed. However, Ullmann teaches that small packets are less efficiently stored throughout a network (§115) and therefore it is useful to determine packets having a size smaller than a predetermined threshold so that an administrator can be alerted to the source of the small packets (§118).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Cheriton to identify connections (flows) with packets whose payloads are smaller than a predetermined limit. One of ordinary skill in the art would have been motivated to perform such a modification to identify wasteful packets on a network, as taught by Ullmann.

Conclusion

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11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL J. SIMITOSKI whose telephone number is (571)272-3841. The examiner can normally be reached on Monday - Thursday, 6:45 a.m. - 4:15 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kambiz Zand can be reached on (571) 272-3811. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. J. S./
Examiner, Art Unit 2134

/Kambiz Zand/
Supervisory Patent Examiner, Art Unit 2134
03/05/08